

What is claimed is:

1. A capacitor of a semiconductor device, comprising:
a lower electrode formed over a semiconductor substrate;
a dielectric layer containing a Ta element formed on the lower electrode; and
an upper electrode formed on the dielectric layer, the upper electrode having an oxidized layer and a titanium containing layer,
wherein the oxidized layer is between the TiN layer and the dielectric layer.
2. The capacitor of claim 1, wherein the lower electrode is formed of Ru, Pt, Ir, Os, W, Mo, Co, Ni, Au, Ag, RuO₂ or IrO₂.
3. The capacitor of claim 1, wherein the dielectric layer is formed of TaON or Ta₂O₅.
4. The capacitor of claim 1, wherein the oxidized layer is TiON.